

**REMARKS**

Favorable reconsideration of the present patent application is respectfully requested in view of the foregoing amendments and the following remarks.

No claims are amended or canceled herein, and claims 14-16 are added. As a result, claims 1-16 are pending in the application.

In the Office Action dated April 20, 2005: Claims 1-3, 5-6, 8-9, 11 and 13 are rejected under 35 U.S.C. §103(a) in view of U.S. Patent 5,592,508 (Cooper) and further in view of U.S. Patent 6,215,737 (Thagard); claim 12 is rejected under 35 U.S.C. §103(a) in view of U.S. Patent 5,774,567 (Heyl) and further in view of the Thagard patent; claims 4 and 10 are rejected under 35 U.S.C. §103(a) in view of the Cooper patent and further in view of the Thagard patent and yet further in view of U.S. Patent 6,052,471 (Van Ryzin); and claim 7 is rejected under 35 U.S.C. §103(a) in view of the Cooper patent and further in view of the Thagard patent and yet further in view of Heyl. It is respectfully submitted that these rejections should be withdrawn for at least the following reasons.

**§103 Rejections of Claims 1-13**

The present invention relates to digital audio in computer systems, and in particular to handling multiple digital-to-analog converters in a personal computer system. In various embodiments, a computer with a plurality of digital-to-analog converters receives digital audio signals from multiple sources. The digital audio signals are routed to the digital-to-analog converters based on the quality of the converter or another criteria such as a priority assigned to the signal.

As a preliminary matter, it should be noted that the pending apparatus claims are drawn to “a personal computer system,” as recited in independent claims 1, 2 and 12, and the method claims are drawn to a “method of routing digital audio … in a personal computer,” as recited in independent claims 9, 11 and 13. By contrast, the patents relied upon in the Office Action do not appear to pertain to personal computer systems. The systems described in the various patents cited in the Office Action may have a computer component as a component of the system described in the patent (e.g., channel 9 of the Cooper system can be embodied as a computer storage or hard disk drive).<sup>1</sup> However, the systems described in the cited patents are not themselves personal computer systems. Hence, the patents cited in the Office Action do not teach or suggest a personal computer or method of routing digital audio in a personal computer.

As for the systems described in the cited patents, the first cited patent, the Cooper patent, involves an analog signal coding and transmission system. As shown in Figure 4, the Cooper system receives input signals at the inputs to the analog-to-digital (A-D) circuits 13-1 to 13-N. The A-D circuits 13-1 to 13-N convert all received analog signals, and pass any received digital signals through. The digital signals are then provided to crosspoint array 16, which in turn, opens connections to the various D-A converters 10-1 to 10-N. The operation and switching of crosspoint array 16 is managed by control 17 of the Cooper system.<sup>2</sup> Neither the routing of signals in the Cooper system, or even the signals themselves, relates to the quality of the D-A converters, as noted by the Office Action.<sup>3</sup> Thus, the Cooper patent does not teach or suggest routing digital audio signals based on a desired converter quality, or other such features.

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<sup>1</sup> Cooper, N-bit channel #9 of Fig. 2; col. 3, lines 23-30.

<sup>2</sup> Cooper, Fig. 4 and col. 4, line 57 to col. 5, line 53.

<sup>3</sup> Office Action, page 3, lines 1-2.

The Office Action contends that the Thagard patent overcomes the deficiencies noted in the Cooper patent. This contention is respectfully traversed. The Thagard patent involves a device for recording and playing back the different channels of a multi-channel audio recording using different sampling rates for the channels. Even if one equates sampling rate to quality, the different sampling rates discussed in Thagard are used in the various channels of a single signal source. The Thagard patent does not use D-A converters having different qualities, or even of different sampling rates, for multiple sources. Thagard uses D-A converters with different sampling rates for the various *channels* of a single audio source. Consequently, the Thagard patent does not teach or suggest the features missing from the Cooper patent.

The Office Action rejects claim 12 in view of the Heyl patent and further in view of the Thagard patent. The Office Action notes that Heyl does not teach to route a signal to a D-A converter on the basis of the desired converter quality. The Office then contends that the Thagard patent purportedly teaches the feature missing from Heyl. The contention that Thagard teaches this missing feature is respectfully traversed, for the reasons set forth above.

The Office Action rejects claims 4 and 10 in view of Cooper and Thagard and further in view of the Van Ryzin patent. Van Ryzin involves receiver control circuitry which automatically detects the various signal sources available and then selects a signal for the input to the receiver if it has been assigned a priority. For instance, if a user is listening to a CD player through his stereo receiver system and turns on the TV, the receiver would detect the TV input and switch over to the TV if it has a higher priority than the CD player. Although Van Ryzin teaches assigning a priority to various input sources, it is respectfully submitted that the system described

in the Van Ryzin patent does not overcome the aforementioned deficiencies of the hypothetical Cooper / Thagard combination.

The Office Action rejects claim 7 in view of Cooper and Thagard and further in view of the Heyl patent. In particular, the Office Action asserts that Heyl teaches a standard personal computer bus, a feature deemed missing from the Cooper and Thagard patents. Without addressing the merits of this assertion, it is respectfully submitted that Heyl does not overcome the aforementioned deficiencies of the hypothetical Cooper / Thagard combination.

For at least the reasons set forth above, it is respectfully submitted that the relied upon patents do not teach or suggest to route the digital audio signals to a selected digital-to-analog converter “based on a desired converter quality,” as recited in claim 1, or the similar features recited in other claims.

Accordingly, it is respectfully submitted that the Cooper patent, the Thagard patent, the Van Ryzin patent and/or the Heyl patent, either taken singly or in a hypothetical combination, do not teach or suggest the features of the claimed invention. Withdrawal of the pending §103 rejections is requested.

In the event this rejection is maintained, it is respectfully requested that the next Office Action point to passages in any of the cited patents that teach to route a digital audio signal to a D-A converter on the basis of the desired converter quality.

*Cooper Teaches Away from the Combination*

According to MPEP 2145 it is improper to combine references where the references teach away from their combination. It is respectfully submitted that at least two aspects of the Cooper patent teach away from the combination.

First, the present invention routes the received input signals to one of several D-A converters “based on a desired converter quality,” as recited in claim 1. Other claims recite similar features. By contrast, instead of routing a signal to a D-A converter having the desired characteristics, the Cooper system reconfigures the D-A converters in order to match the signal routed to it. The Cooper patent explains this tenet of operation, expressly stating that “the D-As 10 can be quickly configured for optimum performance for each type of signal which is being sent to it from the crosspoint 16.”<sup>4</sup> In other words the Cooper systems does not route input signals to a D-A converter based on the desired converter quality, the Cooper system instead reconfigures the D-A converter to achieve the optimum performance of the input signal routed to it.

Secondly, the system described in the Cooper patent handles inputs differently than the present invention. The present invention, as per claim 1, receives *digital* audio signals from multiple sources and routes them to a selected D-A converter based on the desired converter quality. By contrast, the Cooper system receives *analog* signals and feeds them through A-D circuits 13-1 to 13-N, while adjusting the parameters of the A-D circuits to control the quality of the inputs.<sup>5</sup>

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<sup>4</sup> Cooper, col. 5, lines 22-25.

<sup>5</sup> Cooper, col. 7, lines 50-53.

Since the Cooper patent teaches away from being altered to perform like the claimed invention, it is respectfully submitted that the combination is improper. Accordingly, withdrawal of the rejections is requested.

**CONCLUSION**

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. However, should there remain any unresolved issues, the Examiner is kindly invited to contact applicant's representative, Scott Richardson, at telephone number 1.703.739.0573 so that such issues may be resolved as expeditiously as possible.

Respectfully submitted,



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